Analysis of backyard chicken farmers socio-economic and management practices in District Quetta, Balochistan

Abstract

Background: Small scale chicken rearing have an important role in eggs and meat supply in rural and urban areas along with a source of family income especially to women in most of the rural families of third world countries. Their production contributes in poverty alleviation, further these birds can effectively convert kitchen waste and left over human food into high quality animal protein which is ideal for human consumption.
Aims: To assess the socio-economic profile of backyard chicken farmers and their prevailing management practices regarding feeding systems, housing systems, flock size, type and egg production status of these birds in District Quetta Balochistan.
Place and Duration of the Study: Study was conducted in nine union councils (Chasma Achozai, Rahim Gul, Nohsar, Pashtoonabad, Sabzal, Saraghurgai, Kechi Baig, Khuchlak and Panjpai) of District Quetta from November, 2016 to March, 2017.
Methodology: Primary data were collected from 99 female households involved in backyard chicken rearing, selected randomly from nine union councils by using semi-structured questionnaire. Descriptive statistics such as frequency counts, percentages and analysis of variance (ANOVA) were used to infer the data.
Results: Study findings demonstrated that women members of the family were the only prevailing sex (100 %) involved in rearing of poultry birds, greater part (53 %) of the respondent falls in the age group of > 40 years, 58 % were illiterate, 79 % were house wives, 75 % of them were the headed household (primary support of their households), and 40 % belonged to Pashtoon ethnical group; family size (number of persons in the consumer unit during the survey period) of 58% of the respondents was established as 10–20 members. Greater proportion (90 %) of the farmers provided shelter to their birds, made from mud and thatch (kacha). Most (80 %) of these birds were fed on kitchen waste and left over bread. The surveyed household had an average flock size of 27 birds, having composition of 48 % Desi (Indigenous chicken breed), 27 % Fayoumi, 12 % Rhode Island Red (RIR) and 13 % Desi, Fayoumi & RIR cross birds, respectively. Desi birds were mostly reared due to their disease resistance and good production characteristics. 71 % of the flock comprised of adult hen, 15 % cocks and 14 % chicks, respectively. Annual total number of eggs received from backyard chicken was 4190±171 eggs, showing 217±2.4 eggs produced per bird. Average number of eggs consumed per family was found to be 1314±48 eggs (i.e. 32 % of the total egg produced).
Conclusions: Backyard poultry keeping seems to offer a real opportunity to alleviate poverty under current circumstances. Total involvement of women in this activity offers an opportunity for women to participate in economic life and consequently to improve the quality of their life. This would lead to achieve internationally agreed goals for development, sustainability and improvement in the quality of life of these women.

Key words: Balochistan, Chicken, Rural poultry, Socio-characteristics, Women, Quetta.

Introduction

The word backyard chicken assigns to rearing of chicks on small scale i.e. 10–12 birds for family use and up to some extent for cash / income generation (Qureshi, 1985). Chicken kept on small scale under extensive management system significantly contribute to cash income to most of the third world countries rural families (Bessei, 1989, Farooq and Mian, 2001, Halima et al. 2007); Prior to establishment of the commercial poultry sector in the country, backyard poultry birds were the major and the only source of eggs and meat supply (Mian, 1994). Backyard poultry has a proven contribution in the food security of rural masses. Further the products obtained from poultry have superior quality of protein in terms of their biological value as compared to protein received from plant sources. Consequently, the consumption of these products increases the supply of essential amino acids in the consumers' diet. Poultry industry is one of the main segments of Pakistan's livestock sector; this segment has made a tremendous growth in the past four decades with an annual growth rate of 8–10 %. Globally, country has been ranked 11th with

the production of over 1.2 billion broilers annually. It has a contribution of 1.4 % in GDP; while its contribution in agriculture and livestock value addition stood at 6.9 % and 11.7 %, respectively (ESP; 2015-16). In spite of this remarkable development backyard poultry farming has a vital role in improving economic status of a considerable proportion of rural families from lower socio economic rank in the rural areas. Backyard farming fulfills a wide range of functions such as provision of meat and eggs, pest control and petty cash; with minimal level of external inputs, human attention and causing minimum distraction to the environment. To encourage economic growth of poor household resources in rural areas of District Quetta Balochistan, low input intervention backyard poultry farming was introduced by government and non-governmental organizations for supplementing earnings of poor household women population of the district. Poultry birds of Fayoumi and Rhode Island Red (RIR) breeds were provided to these women. Keeping in view its importance for socio economic development of poor rural people a study was conducted in District Quetta, Balochistan to study the:

i) Demographic profile of the rural farmers,
ii) Prevailing housing and feeding systems for keeping poultry under village conditions,
iii) Flock composition, egg production and consumption at household level in backyard poultry farming

MATERIALS AND METHODS

Study Area

Balochistan is the southeast province of Pakistan having thirty-two districts and Quetta is its headquarter that lies between 30° 10' 59.7720" N and 66° 59' 47.2272" E absolute locations, and its elevation from sea level is 1682 meters above. It has a semi-arid climate with an average annual precipitation of 261 mm. From administrative point of view, district is divided into three sub units (tehsils) namely Quetta, Khuchlak and Panjpai. Considering the need of data and accessibility of the area out of thirty-six union councils, one forth i.e. nine (Chasma Achozai, Rahim Gul, Nohsar, Pashtoonabad, Sabzal, Saraghurgai, Kechi Baig, Khuchlak and Panjpai) were selected purposely on the basis of proportional sampling technique. Ninety-nine families already engaged and accustomed to backyard poultry rearing were randomly selected from these union councils.

Sampling procedure

Before going to the final data collection, a pilot study was carried out and accordingly a planned interview schedule was constructed through participatory method. Primary data was personally collected from ninety-nine female household chicken rearers through structured questionnaire. The questionnaire was based on both closed and open form questions.

Data collection and analysis

The data were collected through face to face interview and by direct observation method, in the farmer's homes or fields during November 2016 to March 2017. Descriptive statistics such as frequency counts and percentages were used to present the data, which were performed by using MS excel software.

RESULTS AND DISCUSSION

Socio economic profile of farmers

Age

A significant proportion of the farmers (47 %) were in the age group of <40 years whereas the rest (53 %) were in the age group of >40 years (Fig. 1). Our results are in coordination with the findings of Alabi and Aruna 2005, Rawat et al., 2015 who demonstrated that majority of the farmers were in the age group of >45 years above, while in contradiction to those with Bikash et al., 2010, Singh and Jilani 2012 and Ruchi and Jadoun 2014; who reported that majority of the farmers involved in backyard poultry keeping were in the young age groups (<30 years). Anyhow, a significant proportion of the farmers were in age group when they have the ability to understand and participate in various poultry improvement programs. Consequently, they may have an effective contribution in the up-gradation of their small scale holdings. It is needed to create awareness among the younger generation about backyard poultry rearing and to create opportunities for their self-employment. Their inclusion would be more useful, since they have the power to implement newer technology.

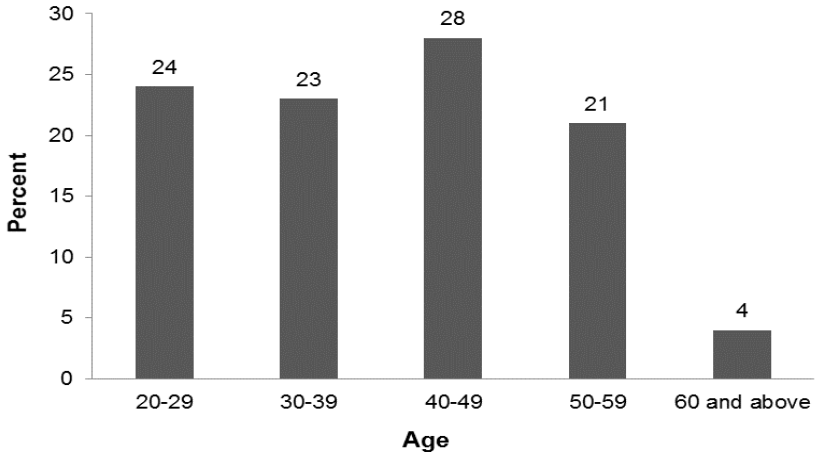

Fig. 1. Age wise distribution of respondents

Education

Highest numbers of the respondents (58 %) were illiterate; whereas 33 % of the respondents had formal school education. Only 9 % of respondents had the education level beyond school with intermediate (4 %), bachelor (3 %) or master level (2 %) education (Fig. 2). High level of illiteracy among female farmers of the district is due to the prevailing customs regarding female education, economic weaknesses and the weaknesses of the education system at rural level. This study is in agreement with Sonaiya EB. 2000, Mandal et al. 2006, Moges et al. 2010 and Tufail et al. 2012 who reported that majority of the backyard poultry farmers had a low level of education in their study area, which is a major limitation to technology adoption in livestock and agriculture. But it was not in agreement with Balamurugan et al. 2017, who reported that more than 70 % of the farmers were educated in his surveyed area (Theni district, Tamil Nadu) these researchers concluded that high level of education will facilitate the respondent for accessing relevant information that will boost the productivity of their enterprises. This suggests that relatively more efforts would be needed in our surveyed area to prepare the farmers to accept interventions for improvement in farming as compared to farmers who were well qualified which will be highly useful to understand the technical aspects of poultry rearing.

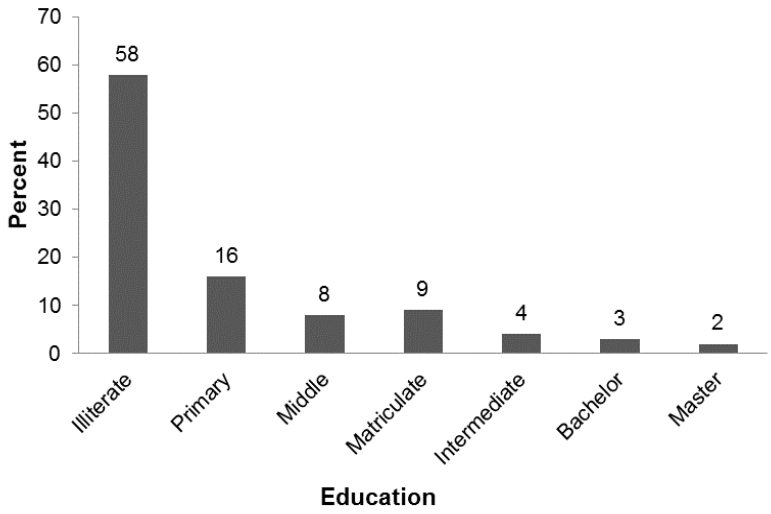

Fig 2. Education status of respondents

Gender

Women members of the family were the only prevailing sex (100 %) involved in rearing of poultry birds. They were the sole person involved in majority of routine works such as feeding, collection of eggs and cleaning etc. It was inferred that male members of the farming family had the role in arranging inputs from outside like feed, medicines and vaccines etc. Thus, backyard poultry keeping has a value as an income source for the female family members. The results of this study are in line with the findings of Ekue et al. 2002, Dessie and Ogle 2001, Alabi and Isidahome 2004 and Jatto NA 2012. These workers reported that women were the sole persons engaged in backyard poultry production operations. Keeping in view the dynamic role of women in this enterprise it becomes important to actively involve them in the process of poultry improvement. Most of the poultry extension workers and vaccinators are usually men. In our reported areas contacts between women and male extension workers are restricted due to cultural and religious factors. This necessitates planning poultry development projects in such a way that women participate actively as poultry advisers, extension workers and vaccinators etc. on the other hand our study finding were contrary to those reported by some other workers who revealed that proportion of female farmers in backyard poultry rearing under their study area were low because of poor labor efficiency (Balamurugan et al. 2017).

Occupation

House wives (79 %) were the major group involved in poultry farming which was followed by teachers (16 %) and health workers (5 %). Noticeable majority (79 %) of the respondents were rearing backyard poultry as main occupation whereas the rest (21 %) were rearing backyard poultry as subsidiary occupation to earn additional income (Fig. 3); these findings are in line with the findings of Bahumguran et al. 2017, who reported that 16 % of the respondents were running the farm as main occupation. The discrepancy found in our study with previous one may be due to that greater proportion of the respondents in Assam were doing non-farming business than farming activity.

Fig 3. Occupation of the respondents

Ethnicity

Pashtoon was the dominant ethnic class (40 %) followed by Brahvi (28 %), Balochi (22 %) and others (10 %); the other group included the famers from Hazara, Uzbek, Tajik and other small ethnic classes (Fig. 4). Ethnic proportion of these farmers is the representation of the ethnic proportion of population in the district; where Pashtoons have been reported to constitute a major part of the population followed by Brahvis, Balochis and other small ethnic classes mentioned earlier. (Pervaiz S. 2011)

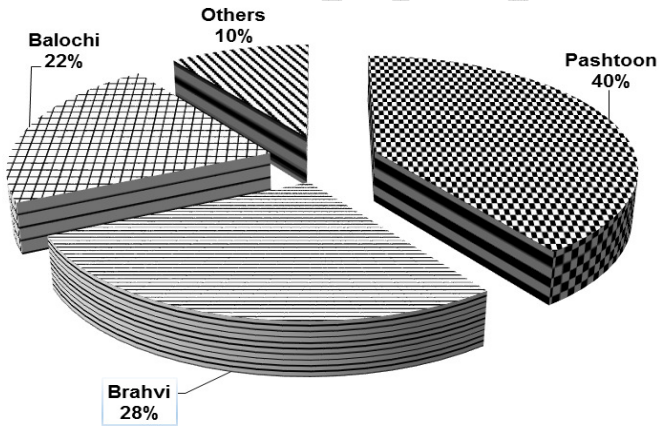

Fig 4. Ethnic proportion of respondents

Family size

In the study area, most of the families were residing in joint family system; and more than half (58 %) of the respondents were in the size of 10 to 20 members per family, while 27 % and 15 % belonged to large (> 20 members) and small family size (< 10 members) categories respectively (Fig. 5). Findings of our study are in agreement with Tufail et al., 2012, Dakshayani and Gangadhar, 2016 and Bahumguran et al. 2017, results who reported that in both studies larger family size of above 10 members and / or nuclear family concept is more preferred. The large family size will constitute a buck of family labour supply relevant to family poultry production. But not agreed with the findings of Singh and Jilani 2005, who reported that majority belonged to medium family size.

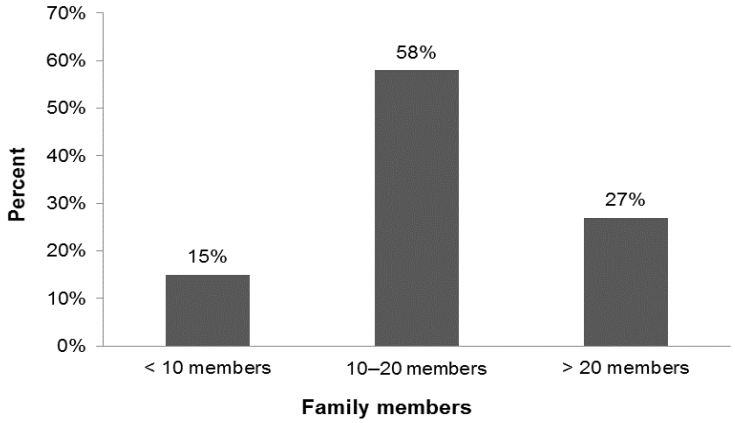

Fig. 5. Proportion regarding family size of respondents

Table 1: Socio-economic profile of backyard chicken farmers of District Quetta

Variables	**Category**	**% age**
Age	20-29 years	24
	30-39 years	23
	40-49 years	28
	50-59 years	21
	60 onward	4
Education	Illiterate	58
	Primary	16
	Middle	8
	Matriculate	9
	Intermediate	4
	Bachelor	3
	Master	2
Gender	Male	0
	Female	100
Occupation	Housewife	79
	Teacher	16
	Health workers	5
Ethnicity	Pashtoon	40
	Brahvi	28
	Balochi	22
	Others	10
Family size	< 10 members	15
	10–20 members	58
	> 20 members	27

Poultry Birds Housing and Feeding Systems

Poultry housing and feeding systems followed by the rural poultry farmers in the selected villages of district Quetta are presented in Table 2.

Poultry housing system

Majority (90 %) of the respondents were providing shelter for their birds, while the rest (10 %) were not providing any formal shelter. The survey indicated that majority (58 %) of the farmers have constructed formal sheds. A larger proportion of farmers did not develop any specific housing facility for their birds, the rest have arranged the place for their birds either with available storage rooms (4 %) and/or with other animals sheds (13 %). Results indicated that majority of the farmers (88 %) maintained their birds in kacha houses (mud and thatch roofs, mud walls and earthen floor) whereas the rest followed partially pucca 10 % (mud and thatch roofs, mud walls and floor paved with bricks) or complete pucca houses 2 % (cemented construction). Our results are in-line with Rawat et al. 2015 who reported that majority of the farmers were providing shelter to their birds.

Poultry feeding system

Results of the survey revealed that the system based on leftover dried bread after domestic consumption was the main constituent (80 %) either along with scavenging (52 %) supplemented with cereals (23 %) and with kitchen waste (5 %). Dry bread system was followed by system based on kitchen waste either with commercial feed (7 %) or with kitchen waste with scavenging (6 %), 7 % of the total farmers relied on commercial feed only for feeding of their birds (Table 1). The frequency at which these supplements were fed varied from farmers to farmers. Feed costs also varied according to the number of birds, and the type and frequency at which these supplements were given. The results of our studies are in line with Sonaiya EB 1995 and Rawat et al. 2015, who found that majority (84 %) of the chickens were kept on scavenging with supplemental feeding including various types of grains in different proportions. However, in our study left over dry bread after home consumption was the main source of feeding with scavenging, cereals and kitchen waste.

Table 2: Backyard chicken housing and feeding systems being followed in District Quetta

Variables	Category	% age
Poultry housing	Poultry shed	58
	Store room	4
	No specific housing	25
	Others	13
Type of housing	*Kacha	88
	**Pucca	2
	***Partially pucca	10
Type of floor	Earthen floor	88
	Brick finished	10
	Cemented	2
Feeding practices	Commercial feed	7
	Dry bread + cereals	23
	Dry bread + scavenging	52
	Dry bread + kitchen waste	5
	Kitchen waste + scavenging	6

** Mud + Thatch; ** Mud + Bricks; *** Mud + Bricks + Paved floor*

Flock Size, Flock type and Egg Production Status

Flock Size

Average flock size was found to be 27 birds; flocks were composed of greater number of adult birds than chicks. The flock was composed of hens, cocks and chicks in a proportion of 71 %, 15 % and 14 %, respectively. The highest number of flocks were containing desi / native birds (48 %) followed by Fayoumi (27 %), RIR (12 %), a mixed flock of desi and RIR birds (6 %), desi, Fayoumi and RIR (3 %) a mixed flock of desi and Fayoumi birds (2 %), Fayoumi and RIR (2 %). The highest numbers of flocks containing desi birds were attributed to be due to disease resistance (36 %) and better egg production (34 %) by the respondents. Other respondents (Farooq et al. 2004 and Tufail et al. 2012) pointed out that higher number of flocks with desi birds were due to less mortality (9 %) and less care needed (6 %) A considerable proportion (15 %) of the respondents remained inconclusive in relative context.

Egg production and consumption status of a house hold

This study revealed that about 4190 ± 171 eggs were obtained in a year by a household out of which about 32 % were consumed by the house hold whereas, rest were either sold or kept for brooding purpose. Number of eggs obtained in this study is relatively higher than those reported by in some other studies. Such as 1407 ± 5.15 eggs reported by Farooq et al. 2002, from backyard chicken in Charsadda district.

The higher annual household egg production and consumption in villages of Quetta district could be attributed to the awareness of farmers about backyard chicken production and readily available market for eggs due to close vicinity of Quetta city–a metropolitan. The same pattern of domestic egg consumption was also seen by Tufail, et al. 2012 in Tehsil Matta Swat.

Table 3: Flock size of various backyard chickens in District Quetta

Flock Size	**Mean ± SE**
Adult birds	23 ± 0.87
Chicks	60 ± 40

Table 4: Flock Proportion of various backyard chickens in District Quetta

Birds Type	**Proportion (%)**
Desi	48
Fayoumi	27
RIR	12
Desi + Fayoumi	2
Desi + RIR	6
Fayoumi + RIR	2
Desi + Fayoumi + RIR	3

Table 5: Egg production in backyard chicken in rural areas of District Quetta

Egg Production	**Mean ± SE**

Total annual household egg production	4190 ± 171
Annual egg production per bird	217 ± 2.40
Total annual household egg consumption	1314 ± 48

Conclusion

In backyard chicken farming, usually few birds are primarily kept for production of chicken meat and eggs for family use; while surplus birds and eggs are sold in the area or in its nearby market. Cash received is consumed for the household economy. This practice is usually followed in almost 2/3rd of our rural families in the country. From the study it is concluded that backyard chicken farming is normally practiced in rural areas of district Quetta, mainly for family consumption and also as a small income generating entity.

The findings regarding socio-economic profile suggested that the backyard chicken farming has an integral role in the rural economy and women have an entire role in it. This suggests that while designing poultry improvement programs, these programs must address the participation of women and in such a way that illiterate people can follow them.

The housing system study indicated that awareness program regarding provision of standard housing is the need of the time. A significant proportion (25 %) of the farmers was providing no housing to their birds. For scientific poultry production, management, disease control etc. Attention should be focused on the use of locally available housing material and the improvement of earthen floor which is essential for adopting a sanitizing program.

The study of the prevailing feeding systems revealed that dry bread and kitchen waste were important constituents of this system. A sizeable proportion of farmers were using commercial feed either as sole source of feeding or in combination with dry bread or kitchen wastes. It is needed to devise a feeding plan to ensure the most rational use of all above named feed resources in an economical way without compromising the production efficiency of these birds.

Recommendations

- Strains of Desi/local birds should be investigated for their productivity and liveliness at government level and suitable strains be propagated at rural level
- Backyard poultry farmers should be persuaded to keep relatively higher number of high producing chicken strains like Fayoumi and RIR to ensure higher productivity and consequently higher economic return.
- Female respondents should be educated on various chicken production, feeding and disease preventive measures particularly on vaccination programme to achieve maximum production.

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